NPDES
INSPECTION REPORT
September 21, 2010

KOOTENAI-PONDERAY SEWER DISTRICT
WASTEWATER TREATMENT PLANT
NPDES PERMIT ID-002122-9

BONNER COUNTY, IDAHO

Prepared by:
John Tindall, P.E.
Idaho Department of Environmental Quality
Coeur d'Alene, Idaho

I. Facility Information

Facility Name:	Kootenai-Ponderay Sewer District Wastewater Treatment Plant
Facility Type:	Wastewater Treatment Plant (WWTP)
Facility Location:	Off Whiskey Jack Road in Kootenai, Idaho Latitude: 48°18.736'N Longitude: 116°29.764'W 511 Whiskey Jack Rd., Sandpoint, ID 83864 P.O. Box 562, Kootenai, ID 83840-0562 (mailing address)
Discharge Location:	Unnamed tributary to Boyer Slough which flows into Lake Pend Oreille. Latitude: 48°18.736'N Longitude: 116°29.764'W
Facility Contacts:	Tim Closson, Operations Manager
Facility Numbers:	Ph: (208) 263-0229 Tim.closson@nctv.com
Permit Number:	ID-002122-09
Permit Status:	Permit became effective January 5, 2002 and expired on January 5, 2007. Status of permit reissuance is not known.

II. Inspection Information

Inspection Date/Time:	September 21, 2010, 1:00 PM to 4:30 PM
Inspectors:	John Tindall (Idaho Dept. of Environmental Quality -IDEQ)
Weather:	Mostly sunny (rain earlier that day) and mild temperature (about 60°F)
Purpose:	Determination of compliance with the NPDES Permit and Clean Water Act.

III. Inspection Entry

This was an announced inspection. Tim Closson, KPSD Operations Manager, was contacted several days prior to the September 21st inspection.

I arrived at the WWTP at about 1:45 PM and met with Tim Closson and Terry Anderson, operator at the KPSD administration building located at the WWTP off Whiskey Jack Road.

The purpose of the inspection was discussed with Mr. Closson. I was not denied access to the WWTP.

Mr. Closson accompanied me throughout the inspection.

IV. Inspection Chronology

On September 21, 2010, the inspection began with an entry interview, followed by a tour of the WWTP and a file review in the administration building. The WWTP tour included an inspection of the treatment system, automatic composite samplers, flow measuring devices, the locations samples are taken to determine compliance with the NPDES permit limits and the discharge into the tributary to Boyer Slough.

As part of the file review, the WWTP's Quality Assurance Plan (QAP), discharge monitoring reports (DMRs) and the supporting documentation for the data input into the DMRs were reviewed. A checklist developed by EPA, Region 10 was used to gather information in key areas related to determining compliance with the NPDES permit. The Operation and Maintenance (O&M) Manual was also reviewed. The KPSD's O&M Manual was updated in October 2009. IDEQ reviewed the O&M Manual in January 2010 and the final manual has not been resubmitted to IDEQ for review.

The inspection concluded with an exit interview where areas of concern observed during the inspection were discussed.

V. Owner and Operator Information

The KPSD owns and operates the wastewater collection, treatment and disposal system. The wastewater system serves the cities of Kootenai and Ponderay and portions of Bonner County.

There are four operators (Tim, Terry, Steve and Joe). The Idaho system classification is as follows:

- Treatment II
- Collection II
- Land Application

The responsible charge operators have the appropriate certifications. For back-up operators, the District needs to get another operator with a Collection II certification and Land Application certification.

VI. Background

The permit authorizes the Facility to discharge through Outfall 001 into a tributary of Boyer Slough and Boyer Slough discharges to Pend Oreille Lake. During the growing season, the discharge to Boyer Slough is sporadic because the District also operates a reuse system where poplar and willow trees are irrigated. The reuse system operates under an IDEQ Reuse Permit LA-000182-02 that expires May 1, 2013.

The WWTP design average day flow is 0.4 million gallon per day (mgd).

The KPSD also owns and operates 12 lift stations and the wastewater collection system serving the District users. A new SCADA system (supervisory control and data acquisition) has been developed for the District with telemetry from the lift stations now accessible through the SCADA. Portable generators and emergency storage capacity are used to handle power outages.

VII. Wastewater Management Process

Wastewater is treated through three (3) aerated lagoons and one (1) non-aerated lagoon. The "Process Schematic" (see Attachment A) shows the configuration and flow pattern of the system. A unique feature of the system is how the 25 million gallon reservoir polishing lagoon at the reuse site is utilized. Normal operation is for wastewater to be pumped from the aerated lagoon system at the WWTP off Whiskey Jack Road to the polishing lagoon through an 8,000 foot long, 8-inch line. After treatment through the polishing lagoon, the wastewater is either disinfected and irrigated on the poplar/willow tree farm or disinfected with liquid sodium hypochlorite and pumped back through the same 8-inch line to the discharge point near the WWTP. The 8-inch line acts as the chlorine contact chamber. Sulfur dioxide gas from 150 lb. cylinders is used for dechlorination prior to the discharge. With the addition of a dechlorination system, it appears that the permitee is able to consistently meet the total residual chlorine permit limits that went into effect June 30, 2004.

Using the polishing lagoon in the manner described above, wastewater can only flow one direction at a time. The operators have used a batch mode of operation and do not discharge continuously like most other WWTPs, even in the non-growing season when no irrigation is occurring. For instance, in January through March 2010, the discharge period was between two (2) to three (3) weeks. Between June to August 2010, the discharge periods varied from none to one (1) week. Monthly average discharged flow rates as reported in some recent DMRs vary widely from no discharge in August 2010 to 0.634 mgd for three (3) weeks in April 2010.

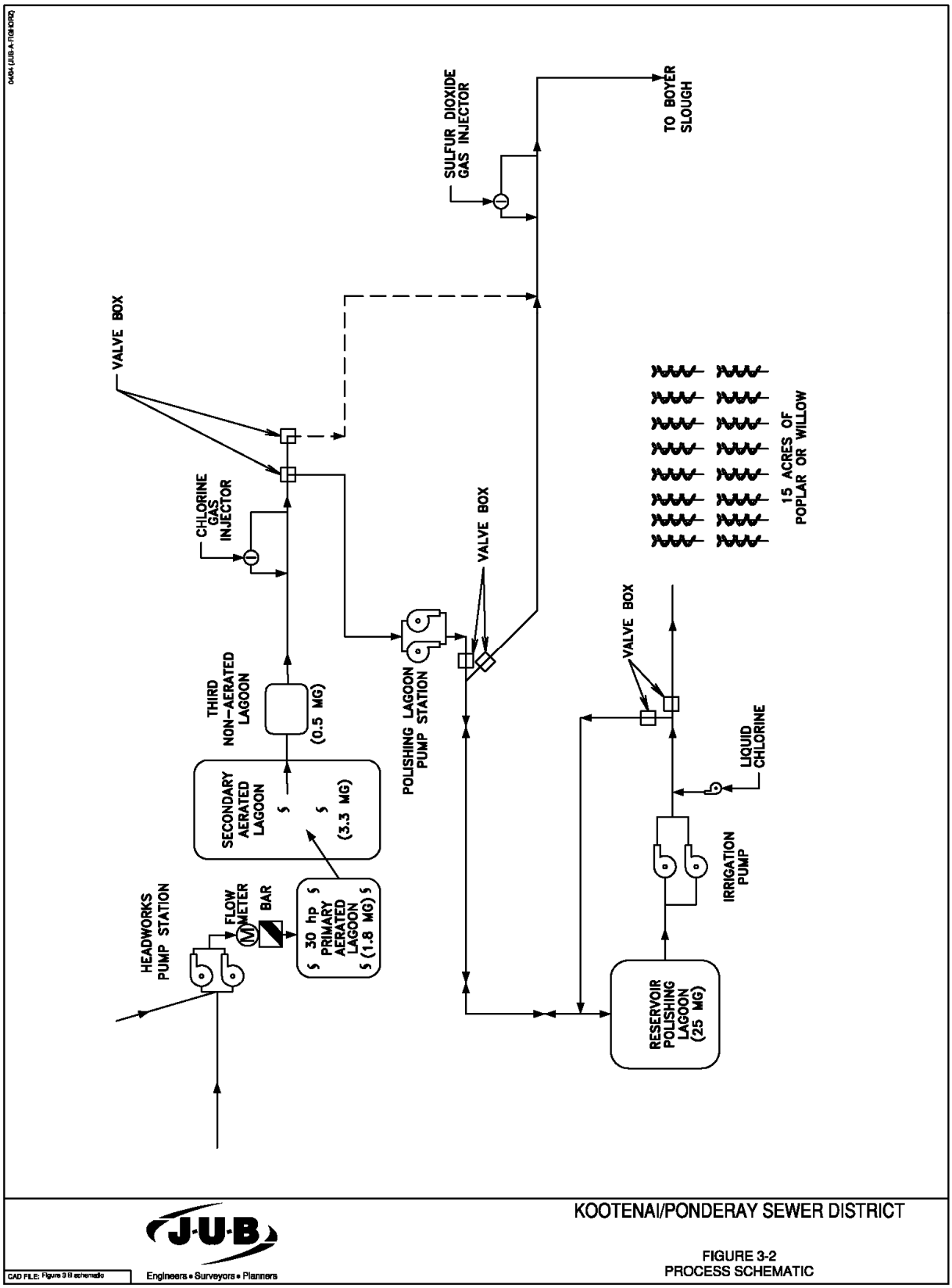
The District seasonally irrigates a poplar/willow tree farm using disinfected, reclaimed water out of the polishing lagoon. Part of the motivation for the operation of the farm is to beneficially utilize the reclaimed water and minimize the discharge into the tributary to Boyer Slough which eventually enters Pend Oreille Lake. Protecting the water quality of Pend Oreille Lake is a District goal.

The influent flow meter is a magnetic meter on the discharge pipe from the Headworks Pump Station. It can only be calibrated by sending it back to the factory or having a factory technician calibrate it in the field. The influent flow meter data is used for O&M information and there are no permit limits that depend on the flow meter accuracy.

The effluent flow meter is an ISCO 4250 ultrasonic, area velocity flow meter with the probe mounted in the effluent pipe to read the open channel flow depths in the pipe. Tim indicated that the manufacturer's recommendation for calibration of the flow meter is to shut off flow through the pipe and observe that the digital read-out indicates no flow is occurring. This calibration is done periodically.

Biosolids from the primary and secondary aerated lagoon were dredged in 2008 and land applied on near-by pastures. KPSD's consultant worked with IDEQ on approval for this land application.

Attachment A



At the time of the inspection, the four (4) lagoons were in operation. Wastewater was flowing from the polishing lagoon was being disinfected through the hypcholorination system at the reuse site and dechlorinated at the WWTP prior to discharge to Boyer Slough.

VIII Facility Sample Collection and Analyses

Sample collection is conducted by the operations staff.

A draft Quality Assurance Project Plan (QAPP) dated February 2009 has been prepared for the District by Brett Converse, P.E. IDEQ has reviewed the QAPP but the final document has not been submitted. In addition, the QAPP is mainly focused on the testing for the reuse system. The QAPP needs to be updated to cover the NPDES related monitoring requirements.

Both grab and composite samples are collected out of the influent headworks and effluent discharge line.

All samples, except for pH and chlorine residual, are analyzed by Accurate Labs in Coeur d'Alene, ID. Chain of custody forms are completed for all samples that are delivered to the contract lab.

DMRs are signed by Tim Closson, Operations Manager. Tim explained that the KPSD Board has authorized Tim to sign the DMRs.

IX. Areas of Concern

This inspection included a review of the treatment system, the sample collection and analyses procedures and documentation required by the NPDES Permit. During the course of the inspection, the following area of concern was noted:

A. Quality Assurance Requirements, Part I.D. of the Permit – This part of the permit requires that the permittee develop a Quality Assurance Plan (QAP). As previously stated, a draft QAP has been prepared and is dated February 2009. This QAP has not been approved by IDEQ and needs to be modified to include NPDES monitoring procedures. In addition, since many of the permit "sample measurements" are determined from sample test results generated by an outside lab (Accurate Labs) it is important to include the QAP from that lab and determine if it complies with the applicable requirements listed in this section of the permit.

The temperature requirements and maximum holding time for the E.coli test delivery to the contract lab according to "Standard Methods" needs to be included in the QAP. In addition, the contract lab's QAP should specify the maximum time between sample collection and sample set-up for testing.

B. Operation and Maintenance Plan, Part I.G. of the Permit – This part of the permit requires the permittee to add specific information to the Operations and Maintenance (O&M) Manual. A draft O&M Manual has been prepared and IDEQ commented on the draft in a January 5, 2010 email. The O&M Manual needs to include the information covered in this section of the permit.

C. Representative Sampling, Part II.A. of the Permit – This part of the permit requires that samples and measurements shall be representative of the volume and nature of the monitored discharge. Calibration of the effluent flow meter (open channel flow calculation

using an ultrasonic probe) is a key to assuring that the measurements are representative. The method of calibration and the frequency of calibration should be described in the O&M Manual and QAP. The low flow limits with the equipment should also be described. Documentation of the periodic calibration is also needed.

D. **Monitoring Procedures and Proper Operation and Maintenance, Parts II.B. and III.E. of the Permit** – Part II.B. of the permit specifies that monitoring must be conducted according to test procedures approved under 40CFR Part 136. Part III.E. of the permit specifies that the permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit. Total chlorine residual testing is done using a hand-held digital colorimeter and the periodic calibration of this instrument was not being done and recorded. If the meter is not being properly calibrated in accordance with EPA approved methods, the results may not be representative of the discharge as required in Part II.A. of the permit. Documentation of the calibration is an important part of the self-monitoring program.

E. **Reporting of Monitoring Results, Part II.C. of the Permit** – This part of the permit requires that the permittee must summarize monitoring results each month on the Discharge Monitoring Report (DMR) form and sign and certify all DMRs are true, accurate and complete. During the inspection, the records, analytical data from Accurate Labs and DMR for March 2010 were reviewed.

Both the weekly and monthly BOD and TSS loading calculations were not being done according to the method considered by EPA to be correct. Currently the weekly average loading calculations are done using the highest weekly concentration (usually only one sample is taken per week during the weeks there is a discharge) multiplied by the monthly average flow. The monthly average loading calculations are done using the arithmetic mean of the weekly concentrations (monthly concentration) multiplied by the monthly average flow. Tim Closson stated that past EPA inspections have not noted that the method he was using was not correct for these average loading rates. For this reason, he believed he was certifying DMRs that were true and accurate.

According to David Domingo, EPA Region X, and a 1985 EPA guidance document (see attachment), the weekly loading calculations should be made based on the arithmetic mean of the daily loadings for a given week with the loadings calculated using the concentration and the flow for the day that the sample was taken. If only one (1) sample is taken in a given week, that concentration and load will be the "average" for that week. The highest of the weekly average concentrations and loadings is recorded for the "weekly average" in the DMR. The monthly loading is calculated as the arithmetic mean of the weekly loadings calculated as previously described.

X. Additional Observations

A. **Compliance with the Permit Conditions in Parts I.B., I.C. and I.F. of the Permit** – The work required to meet the permit conditions for "Receiving Water Monitoring" (I.B.), "Outfall Pipe and Spill Pad" (I.C.) and "Total Residual Chlorine Compliance Schedule" (I.F.) appears to have been completed. The completion dates for these tasks were not checked.

B. **Suggestions for the Next Permit** – For the technology based limits, like BOD and TSS, if the next permit would include concentration limits and a daily maximum flow limit, this would possibly provide the District with the flexibility to operate the system in a batch

mode without negatively impacting the receiving water. The method prescribed by EPA for "averaging" of the loads does not seem to take into account days when there is no discharge and no load.

XI. **Inspection Sampling** - Samples were not collected by IDEQ during this inspection.

Report Completion Date: November 4, 2010

Lead Inspector Signature: John Tindall

Table 2

5-Day Biochemical Oxygen Demand (BOD_5)
(Sample Calculation)

	Flow (MGD)	x BOD_5 (mg/l)	x 8.34 (lbs/gal)	= Quantity (lbs/dy)
1st Week Wed	.33	19	8.34	52.29
2nd Week Tue	.47	6	8.34	23.52
3rd Week Thu	.60	11	8.34	55.04 (highest)
4th Week Mon	.52	7	8.34	30.36
Tue	.40	10	8.34	33.36

Daily Average = $\frac{52.29 + 23.52 + 55.04 + 30.36 + 33.36}{5} = \frac{194.57}{5}$ = 38.9 lbs/dy

Maximum = 55.0 lbs/dy

BOD_5 Daily Average Loading (lbs/dy) = 38.9 lbs/dy
BOD_5 Maximum Daily Loading (lbs/dy) = 55.0 lbs/dy

Total Suspended Solids (TSS)
(Sample Calculation)

	Flow (MGD)	x TSS (mg/l)	x 8.34 (lbs/gal)	= Quantity (lbs/dy)
1st Week Wed	.33	34	8.34	93.57 (highest)
2nd Week Tue	.47	3	8.34	11.76
3rd Week Thu	.60	15	8.34	75.06
4th Week Mon	.52	6	8.34	26.02

Monthly Average = $\frac{93.57 + 11.76 + 75.06 + 26.02}{4} = \frac{206.41}{4}$ = 51.6 lbs/dy

Maximum = 93.57 lbs/dy

TSS Daily Average Loading (lbs/dy) = 51.6 lbs/dy
TSS Maximum Dialy Loading (lbs/dy) = 93.6 lbs/dy

Enter the average monthly loading for BOD_5 (38.9 lbs/dy in the Table 2 example) and the maximum daily loading (55.0 lbs/dy) on the DMR as "average" and "maximum", respectively. The total number of exceptions (permit conditions exceeded) for the average and maximum must be entered in the "No. Ex." box on the report. As with BOD_5, Total Suspended Solids averages are entered on the DMR. (Table 2, lower, illustrates TSS calculations.)

c. Flow. When flow is to be monitored the average monthly flow is the average of all the daily determinations of flow made during the monthly reporting period. The flow from the sample illustration (Table 1) was computed to be 0.44 MGD. The daily maximum flow is the highest daily flow observed during the monthly reporting period. This was 0.64 MGD which occurred on Monday of the 5th week in the sample illustration. The monthly average and daily maximum flow should be determined from available data. Daily flow and concentration are used in calculating loadings. Enter both these two values on the report form. The total number of exceptions (permit conditions exceeded) for average flow must be entered in the "NO. EX" box on the report.

d. pH (Standard Units, S.U.). The minimum and the maximum values for pH allowed in a discharge permit are usually listed toward the bottom of the "Effluent Limitations" page. Reported values should be extremes only, of all the test values determined during the reporting month. (Reference to the sample monitoring data [Table 1] indicates that the maximum pH is 7.7 S.U. and the